AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (previously presented) A network diagnostic system for an optical transport network having a plurality of network elements, comprising;

a first network element residing in the optical transport network, the first network element having a network diagnostic operation integrated therein and operable to perform the network diagnostic operation, wherein the network diagnostic operation directly monitors an optical signal traversing the optical transport network; and

a network diagnostic device in data communication with a second network element residing in the optical transport network and operable to initiate the network diagnostic operation at the first network element;

the second network element adapted to receive a request to initiate the network diagnostic operation from the network diagnostic device, the second element operable to map the request into at least one optical network frame and transmit the optical network frame over an optical supervisory channel of the optical transport network to the first network element.

2. (original) The network diagnostic system of the Claim 1 wherein the first network element is further operable to communicate the network performance data determined by the network diagnostic operation to the network diagnostic device.

3. (original) The network diagnostic system of Claim 2 wherein the network diagnostic device is operable to display the network performance data received from the first network element.

4. (previously presented) The network diagnostic system of Clam 1 wherein the network diagnostic device is directly connected to the second network element.

5. (previously presented) The network diagnostic system of Claim 1 wherein the network diagnostic device is connected via a computer network to the second network element.

6. (previously presented) The network diagnostic system of Claim 5 wherein the second network element is further operable to communicate in real-time the network performance data determined by the network diagnostic operation to the network diagnostic device using TL1 network management protocol.

7. (previously presented) The network diagnostic system of Claim 5 wherein the first network element is further operable to store the network performance data in a storage medium residing on the second network element and the network

diagnostic device operable to retrieve the network performance data from the second network element using a file transfer protocol.

8. (cancel)

9. (previously presented) The network diagnostic system of Claim 1 wherein the second network element is adapted to receive Ethernet frames from the network diagnostic device, where the Ethernet frames embody the request to initiate the network diagnostic operation; the second network element being further operable to map the Ethernet frames into at least one optical network frame and transmit the optical network frames over an optical supervisory channel of the optical transport network.

10. (original) The network diagnostic system of Claim 9 wherein the first network element is adapted to receive the optical network frames over the optical supervisory channel from the second network element and to extract the Ethernet frames from the optical network frames.

11. (Original) The network diagnostic system of Claim 1 wherein the network diagnostic function is selected from the group comprising an optical time domain reflectometer test, an optical spectrum analyzer test, a bit error rate test, and a Q contour mapping test.

12. (original) The network diagnostic system of Claim 1 wherein the network diagnostic operation is further defined as an optical time domain reflectometer test, such that the network performance data is optical attenuation data for an optical trace signal traversing one or more optical spans in the optical transport network and fiber characteristic data for the optical spans.

13. (original) The network diagnostic system of Claim 12 wherein the optical attenuation data is expressed in terms of reflected optical power data, and corresponding measurement point data.

14. (original) The network diagnostic system of Claim 13 wherein the optical attenuation data further includes trace event data for a plurality of trace events, where each trace event data is expressed in terms of an event identifier, an event type, an event distance, reflectance associated with the event, insertion loss associated with the event, cumulative loss for the event, attenuation between the event and a subsequent event, and an event description.

15. (original) The network diagnostic system of Claim 1 wherein the network diagnostic operation is further defined as an optical spectrum analyzer test, such that the network performance data is signal power data for an optical data signal traversing through the optical transport network.

16. (original) The network diagnostic system of Claim 15 wherein the signal power data is expressed in terms of optical power data and corresponding measured wavelength data.

17. (original) The network diagnostic system of Claim 16 wherein the signal power data further includes channel trace data, where the channel trace data is further defined as a channel identifier, a measured channel wavelength, a variance of the measured wavelength in relation to the provisioned wavelength for the channel and a signal-to-noise ratio value for the channel.

18. (original) The network diagnostic system of Claim 1 wherein the network diagnostic operation is further defined as a bit rate error test, such that the network performance data is bit rate error data for an optical data signal traversing through the optical transport network.

19. (original) The network diagnostic system of Claim 1 wherein the network diagnostic operation is further defined as a Q contour mapping test, such that the network performance data is Q contour mapping data.

20. (original) The network diagnostic system of Claim 19 wherein the Q contour mapping data is expressed in terms of a sampling phase percentage, a decision threshold percentage and a Q value.

21. (previously presented) A method for diagnosing an optical transport network having a plurality of network elements, comprising:

integrating a diagnostic operation into a first network element in the optical transport network;

transmitting a request for the diagnostic operation from a network diagnostic device remotely located from the first network element to a second network element in the optical transport network;

communicating the request from the second network element via an optical supervisory channel to the first network element;

performing the diagnostic operation on the first network element, wherein the network diagnostic operation directly monitors an optical signal traversing the optical transport network; and

communicating the network performance data to the network diagnostic device.

22. (original) The method of Claim 21 wherein the diagnostic operation is selected from the group comprising an optical time domain reflectometer test, an optical spectrum analyzer test, a bit error rate test, and a Q contour mapping test

23. (original) The method of Claim 21 wherein the step of performing the diagnostic operation further comprises carrying out an optical time domain reflector test, such that the such that the network performance data is optical attenuation data for an optical trace signal traversing one or more optical spans in the optical transport network and fiber characteristic data for the optical spans.

24. (original) The method of Claim 23 wherein the optical attenuation data is expressed in terms of reflected optical power data, and corresponding measurement point data.

25. (original) The method of Claim 24 wherein the optical attenuation data further includes trace event data for a plurality of trace events, where each trace event data is expressed in terms of an event identifier, an event type, an event distance, reflectance associated with the event, insertion loss associated with the event, cumulative loss for the event, attenuation between the event and a subsequent event, and an event description.

26. (original) The method of Claim 21 wherein the step of performing the diagnostic operation further comprises carrying out an optical spectrum analyzer test, such that the network performance data is signal power data for an optical data signal traversing through the optical transport network.

27. (original) The method of Claim 26 wherein the signal power data is expressed in terms of optical power data and corresponding measured wavelength data.

28. (original) The method of Claim 27 wherein the signal power data further includes channel trace data, where the channel trace data is further defined as a channel identifier, a measured channel wavelength, a variance of the measured

wavelength in relation to the provisioned wavelength for the channel and a signal-to-noise ratio value for the channel.

29. (original) The method of Claim 21 wherein the step of performing the diagnostic operation further comprises carrying out a bit rate error test, such that the network performance data is bit rate error data for an optical data signal traversing through the optical transport network.

30. (original) The method of Claim 21 wherein the step of performing the diagnostic operation further comprises carrying out a Q contour mapping test, such that the network performance data is Q contour mapping data.

31. (original) The method of Claim 30 wherein the Q contour mapping data is expressed in terms of a sampling phase percentage, a decision threshold percentage and a Q value.

32. (cancel)

33. (previously presented) The method of Claim 1 herein the step of communicating the operation to the first network element further comprises mapping Ethernet frames into a payload portion of one or more optical network frames and transmitting the optical network frames over an optical supervisory channel in the optical transport network.

34. (original) A data record for communicating network performance data from an optical time domain reflectometer test, the data record embodied in a carrier wave, comprising:

header data that stores identification information about the data record;

optical attenuation data that stores information for an optical trace signal which traverses one or more optical spans in an optical transport network, where the optical attenuation data is expressed in terms of reflected optical power and corresponding measurement points;

trace event data that stores information about events that are detected during the optical trace; and

fiber data that stores refractive index information for each of the optical spans implicated in the optical trace.

35. (original) A data record for communicating network performance data from an optical spectrum analyzer test, the data record embodied in a carrier wave, comprising:

header data that stores identification information about the data record;

signal power data that stores information for an optical data signal which traverses an optical transport network, where the signal power data is expressed in terms of optical power and corresponding measured wavelength; and

channel data that stores information for each channel embodied in the optical data signal.

36. (original) A data record for communicating network performance data from a Q contour mapping test, the data record embodied in a carrier wave, comprising:

header data that stores identification information about the data record; and

contour mapping data that stores information for an optical data signal received at a receiver in an optical transport network, where the contour mapping data is expressed in terms of sampling phase percentage, decision threshold percentage and corresponding Q value for the optical data signal.